

Appln. No. 10/076,499  
Amdt. dated November 5, 2004  
Official Action dated October 4, 2004

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

Claim 1 (cancelled)

Claim 2 (original)

A process for preparation of nutritionally upgraded oilseed meals, which are protein and lipid-rich and have a reduced fibre content, and plant oils from oilseeds for use in fish or other non-human animal diets or human foods comprising the steps of:

- providing a source of oilseed;
- subjecting said oilseed to heat treatment to substantially reduce the concentration of at least some antinutritional components normally present in said oilseed to obtain heat-treated particulate seed;
- providing a source of unhydrolyzed animal offal;
- blending said heat-treated seed in particulate form with said animal offal, and if required water together with an antioxidant, to form a mixture thereof;
- cooking said mixture under conditions selected to substantially improve protein digestibility, and substantially free cellular water present in said animal offal, as well as to facilitate separation of protein from the lipid in said animal offal and said oilseeds to obtain a cooked mixture; and
- separating said cooked mixture into a stickwater fraction, a moisture containing protein-rich fraction, and an animal feed grade oil fraction.

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Claim 3 (currently amended)

In a [[A]] process according to claim 1, for the preparation of a protein concentrate concentrates and lipid source [[sources]] from co-processing of animal offal with oilseed for use in fish or other non-human animal feeds, wherein the process includes the steps of providing a source of oilseed and [[the]] cold pressing step of said oilseed fraction is carried out so as to substantially reduce the particle size of said oilseed fraction to yield a high value human grade oil and protein and lipid-rich meals with reduced fibre content; the improvement said process comprising the further steps of:

- providing a source of unhydrolyzed animal offal;
- blending said protein and lipid-rich meal with said animal offal, and if required water together with an antioxidant, to form a blended mixture thereof;
- cooking said blended mixture under conditions selected to substantially improve protein digestibility, and substantially free cellular water present in said animal offal, as well as to facilitate separation of protein from the lipid in said animal offal and said oilseeds to obtain a cooked mixture; and
- separating said cooked mixture into a stickwater fraction, a moisture containing protein-rich fraction, and an animal feed grade oil fraction.

Claims 4-6 (cancelled)

Claim 7 (original)

The process according to claim 3, further including the step of extracting said protein and lipid-rich meals with a solvent.

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**Claim 8 (original)**

The process according to claim 2, further including the step of stabilizing said plant oils by adding an antioxidant.

**Claim 9 (original)**

The process according to claim 2, further including the step of drying said protein-rich fraction to reduce its moisture content to below about 10%.

**Claim 10 (original)**

The process according to claim 2, wherein said heat treatment is a rapid heat treatment.

**Claim 11 (original)**

The process according to claim 2, wherein said oilseed is selected from the group consisting of canola, rape seed, soybeans, sunflower seed, flax seed, mustard seed, cotton seed, hemp and mixtures thereof.

**Claim 12 (original)**

The process according to claim 2, wherein said oilseed is selected from the group consisting of canola, sunflower seed, flax seed, mustard seed and mixtures thereof.

**Claim 13 (original)**

The process according to claim 2, wherein said animal offal is selected from the group consisting of fish processing waste, whole fish, fish by-catch, squid offal, whole birds without feathers, beef offal, poultry offal, lamb offal and mixtures thereof.

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**Claim 14 (original)**

The process according to claim 2, wherein said oilseed and said animal offal are mixed together in a ratio of about 10:90 to about 90:10 by weight.

**Claims 15-41 (cancelled)**

**Claim 42 (new)**

The process according to claim 3, said process further comprising the steps of:

- subjecting said oilseed to heat treatment at a temperature and time sufficient to deactivate, destroy or reduce concentration of some antinutritional factors present in said oilseed, improve digestibility and reduce moisture content;
- providing said source of unhydrolyzed animal product selected from animal offal, whole fish, fish by-catch and whole birds without feathers;
- cooking said mixture at a temperature of about 85 - 95°C for a time sufficient to improve protein digestibility and free the bound water present in said animal offal and facilitate the separation of protein from the lipid in said animal product and said oilseed,
- removing fluid comprised of lipid and water soluble components from said mixture to obtain a pressed cake; and,
- drying the pressed cake at a temperature for a time sufficient for the pressed cake to reach a moisture content of about 7 - 10% to provide a protein concentrate.

**Claim 43 (new)**

The process of claim 42, including the further step of condensing the stickwater.

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**Claim 44 (new)**

The process according to claim 42, wherein said heat treatment is carried out at a temperature of about 100-115°C for a time of about 1.5 to about 30 mins.

**Claim 45 (new)**

The process according to claim 42, further including the step of dehulling said oilseed.

**Claim 46 (new)**

The process according to claim 45, wherein said dehulling is carried out by impact or disc process coupled with a gravity screening and/or air-classification process.

**Claim 47 (new).**

The process according to claim 42, wherein said oilseed is a member selected from the group consisting of canola, rape seed, soybeans, sunflower seed, flax seed, mustard seed, cotton seed, hemp and mixtures thereof.

**Claim 48 (new)**

The process according to claim 47, wherein said oilseed is a member selected from canola, soybeans, sunflower seed, cotton seed and mixtures thereof.

**Claim 49 (new)**

The process according to claim 48, wherein said animal offal is fish offal.

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**Claim 50 (new)**

The process of claim 42, further including the step of:  
-adding a palatability enhancer to said mixture prior to the cooking step  
or after the pressing step.

**Claim 51 (new)**

The process according to claim 42, further including the step of adding  
an antioxidant to the mixture prior to the cooking step or after the  
pressing step.

**Claim 52 (new)**

The process according to claim 50, wherein said palatability enhancer  
is a member selected from the group consisting of products based on  
krill, euphausiids, squid and mixtures thereof.

**Claim 53 (new)**

The process according to claim 51, wherein said antioxidant is a  
member selected from the group consisting of ethoxyquin, butylated  
hydroxyanisole, butylated hydroxytoluene, Vitamin E and mixtures  
thereof.

**Claim 54 (new)**

In a process for preparation of nutritionally upgraded oilseed meals,  
which are protein and lipid-rich and have a reduced fibre content, and  
plant oils from oilseeds for use in fish or other non-human animal diets  
or human foods the improvement comprising the steps of:  
- providing a source of oilseed;  
- subjecting said oilseed to a drying step to obtain oilseed having a  
moisture content of less than 10% to thereby improve dehulling of said  
oilseed;

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- dehulling said oilseed to provide a source of dehulled oilseed;
- providing a source of unhydrolyzed animal offal;
- blending said dehulled oilseed with said animal offal, and if required water together with an antioxidant, to form a mixture thereof;
- cooking said mixture under conditions selected to substantially improve protein digestibility, and substantially free cellular water and lipids present in said animal offal, as well as to facilitate separation of protein from the lipid in said animal offal and said oilseeds to obtain a cooked mixture; and
- separating said cooked mixture into a stickwater fraction, a moisture containing protein-rich fraction, and an animal feed grade oil fraction.

**Claim 55 (new)**

The process according to claim 2, wherein said oilseed is treated to dephytinize said oilseed.

**Claim 56 (new)**

The process according to claim 3, wherein said oilseed is treated to dephytinize said oilseed.

**Claim 57 (new)**

The process according to claim 54, wherein said oilseed is treated to dephytinize said oilseed.

**Claim 58 (new)**

The process according to claim 2, further comprising the step of extracting said protein rich fraction with a solvent.

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**Claim 59 (new)**

The process according to claim 3, further including the step of extracting said protein and lipid rich meals with a solvent.

**Claim 60 (new)**

The process according to claim 54, further comprising the step of extracting said protein rich fraction with a solvent.

**Claim 61 (new)**

The process according to claim 58, wherein said solvent includes hexane.

**Claim 62 (new)**

The process according to claim 59, wherein said solvent includes hexane.

**Claim 63 (new)**

The process according to claim 60, wherein said solvent includes hexane.